

# The Secret to Higher Performance and Lower Cost Construction Projects

The construction sector generated revenues of \$2 trillion in the United States in 2019 and made a contribution of 4.1% in the country's GDP in 2020. While 2020 was upended by the pandemic, construction continues to remain a core sector relevant for national and global economies. That said, becoming and staying successful is hard here. Construction companies face several issues, such as the rising cost of material, disrupted supply chains impacted by the pandemic, lack of talent, and inconsistent technology use. Issues like these lead to project delays and safety concerns resulting in adverse impacts on the cost and performance of the construction projects.

## **Can the construction sector learn from the experiences of other business sectors and create more opportunities for profits and better business outcomes?**

Here are a few strategies that construction firms can adopt to achieve high performance at a lower cost without any compromises on safety and quality.

### **1. Improved Planning**

Cost and schedule overruns are perennial concerns and are cited as the main causes of failure of construction projects. Planning is an essential activity that can be integrated with advanced analytics and technologies for improved performance and results.

- **Data Analytics Tools:** Special data analytics tools designed around Big Data and Business Intelligence concepts can assist Construction Managers to correctly schedule resources and the raw material needed, internal and external risks that may get involved, the estimated duration for each stage of the project activities, etc.
- **Cost-Benefit Analysis:** A more systematic budgeting and planning procedure can assist the construction team and the contractors to determine project costs, projected cash flows, and the associated margins and their timing better and more transparently. The exercise can become more inclusive by inviting participation from more people and providing richer and more comprehensive data.

### **2. Building Information Modeling (BIM) and Computer-Aided Design (CAD)**

BIM is a collaborative technique to develop three-dimensional models for construction projects to enable effective decision-making. Construction companies can adopt BIM techniques to come up with properly analyzed designs. Insights are available from each of the core steps designers and architects follow in BIM as pre-design, schematic model, schematic design, interference checks, element ownership, and construction.

The models allow the construction teams to view the three-dimensional view along with the 4D and 5D visualizations for time and costs respectively to make better resource estimations and better plans. BIM also anticipates the operational and maintenance costs for calculating the detailed project budget. Technical drawings can be enhanced to achieve high-degree precision making errors and conflicts visible early in the cycle.

With technological advancements, construction firms can now integrate BIM techniques with the latest innovations for even greater value. For instance, Augmented Reality (AR) and Virtual Reality (VR) can further improve the visibility of the designing options. Approximately, 80% of the average cost overruns in construction projects occur due to change orders. However, with in-depth and accurate designs, better planning, and clash detection through BIM, the probability of such changes reduces. This in turn can allow improved performance at lower costs.

### **3. Modular Construction Approach and Pre-fabrication**

The modular construction approach involving pre-fabricated elements can be an effective method to improve the performance and check the costs at the same time. The modular construction projects are being seen to be 30-50% faster than traditional construction projects. One of the major benefits of building modular is the elimination of at least 80% of the actual construction activities from the actual site location. This saves time, effort, and money. Reduced activity on-site also improves safety.

The construction sector has a major role in global pollution levels and climate change. It contributes 23%, 40%, and 50% towards the air, water, and land pollution respectively. The modular construction approach can involve eco-friendly raw materials and can also use recycled materials. The building structures developed also promise improved energy-efficiency. Also, sound insulation and fire-proofing are certain with durable materials used in modular construction. Prefabricated construction reduces the overall timeframe of the construction project automatically leading to lower costs.

### **4. Construction Software and Technologies**

Technology should be used as a powerful tool to streamline construction activities and enhance the performance of construction projects. Several mobile apps can be used in construction projects for improving communication, collaboration, monitoring and tracking, reporting, safety, and compliance. As more data-focused tools come into play, more data becomes available for analytics too. Real-time site reports can be generated and shared through these apps for quicker communications and problem-solving. Remote equipment tracking and monitoring are also one of the features offered by the construction mobile apps. Better insights can be gained on the equipment data, usage, and performance. Such capabilities can assist the construction managers to carry out better planning and control.

Surveillance technologies can also be used at the construction site to ensure the safety of the construction workers. The use of drones can allow remote site monitoring and alerts can be generated in the possibility of site accident.

Project management and fleet management software packages can also be used to boost productivity levels, control costs, and achieve better project outcomes.

### **Brief Summary**

Performance improvements and cost reduction are two elements desired by every industrial and business sector. That applies to the construction industry as well. A winning combination of technology, strategy, and operational excellence can enable construction companies to bring down costs and enhance performance. BIM techniques, modular approaches, data-driven planning, and construction technologies can allow construction companies to balance project performance, costs, schedule, and quality. That said, it's clear the challenge is no longer the availability of tools, technologies, and methods. The biggest problem construction companies face is how to find the talent with the capability and the interest to make the most of these tools and technologies and how to enable and empower them to deliver at their best. But that's a story for another day.

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